

1 **ABSTRACT**

2       Methods and systems of testing software and modeling user actions are  
3 described. In some embodiments, multiple different algorithms are provided for  
4 operating on a software model. The software model describes behavior associated  
5 with software that is to be tested. Different sets of algorithms can be selected for  
6 operating on the software model to produce a sequence of test actions that are to  
7 be used to test the software. The algorithms can be mixed and matched to achieve  
8 a desired testing result. In some embodiments, the different algorithms comprise  
9 deterministic algorithms, random algorithms, and various types of algorithms  
10 therebetween. In one embodiment, the software model comprises a state graph  
11 having nodes that represent state, and links between the nodes that represent  
12 actions. The different algorithms that are available for selection can have different  
13 graph traversal characteristics such that the state graph can be traversed in  
14 different manners. For example, algorithms that are more local in their traversals  
15 can be teamed with algorithms that are more global in their traversals, thus  
16 covering a wider area of the state space with good local coverage in some areas.